

# Homework 5

CMSY-217, Spring 2014

Upload your solution to the Canvas course website as a zip archive file prior to the start of class on Thursday, April 24.

The Social Security Administration provides a webpage (<http://www.ssa.gov/OACT/babynames>) with two interactive applications that allow you to display the most popular baby names for a selected year and track the popularity of a selected baby name over several years. The data are based on Social Security Card applications for years 1880 through 2012.

Rank	Male name	Female name
1	Jacob	Sophia
2	Mason	Emma
3	Ethan	Isabella
4	Noah	Olivia
5	William	Ava
6	Liam	Emily
7	Jayden	Abigail
8	Michael	Mia
9	Alexander	Madison
10	Aiden	Elizabeth
11	Daniel	Chloe
12	Matthew	Ella
13	Elijah	Avery
14	James	Addison
15	Anthony	Aubrey
16	Benjamin	Lily
17	Joshua	Natalie
18	Andrew	Sofia
19	David	Charlotte
20	Joseph	Zoey

Note: Rank 1 is the most popular, rank 2 is the next most popular, and so forth.

Year of birth	Rank
2012	11
2011	10
2010	9
2009	9
2008	10
2007	16
2006	18
2005	19
2004	23
2003	24
2002	25
2001	30
2000	38
1999	63
1998	87
1997	109
1996	112
1995	136
1994	155
1993	158

Note: Rank 1 is the most popular, rank 2 is the next most popular, and so forth. Name data are from Social Security card applications for births that occurred in the United States.

The data have been placed in a Java DB (Apache Derby) database named `babynames` with a table for each year of birth that contains columns for name, sex, and number of births. Each table is named with the letters `YOB` followed by the four-digit year for which the data was collected. For example, the table `YOB2012` contains the data for year 2012. Note that each name entry in these tables begins with a capital letter and is followed by all lowercase letters.

```
ij> DESCRIBE YOB2012;
COLUMN_NAME      | TYPE_NAME
-----
NAME              | VARCHAR
SEX               | CHAR
NUMBER            | INTEGER
```

There is also a table called `TOTALBIRTHS` which contains the total number of births, by gender, for each year.

```
ij> DESCRIBE TOTALBIRTHS;
COLUMN_NAME          | TYPE_NAME
-----
BIRTHYEAR            | INTEGER
MALE                  | INTEGER
FEMALE                | INTEGER
```

The `BabyNames` class contains a Swing application that provides you with a graphical user interface (GUI) similar in appearance to the HTML forms on the Social Security website. In addition, the event-handling code has been written so that when the user clicks the `Go` button - a `BabyNamesQuery` object is created, the input parameters are passed to the `getList` or `getRank` method, and a results `String` is returned which is displayed in the `JTextArea` at the bottom of the GUI. The following figure shows the `BabyNames` application running with the results of a `getList` method call displayed.

The screenshot shows a Java Swing window titled "Baby Names". It contains two main panels. The left panel, "Popular Names by Birth Year", has a text area for "Enter year of birth" with "2012" entered, a "Go" button, a "Popularity" dropdown menu set to "Top 20", and a "Reset" button. Below this are three radio buttons for "Name ranking may include": "Percent of total births", "Number of births", and "Neither" (which is selected). The right panel, "Popularity of a Name", has a "Name?" text field, a "Go" button, a "Reset" button, a note "Do not use spaces, hyphens, or other non-alphabetic characters in the name.", a "Sex associated with name" section with radio buttons for "Male", "Female", and "None" (which is selected), and a "Number of years?" text field with "0" entered. At the bottom is a large `JTextArea` displaying the results of a `getList` method call for the year 2012. The results are presented as a table with columns "Rank", "Male Name", and "Female Name".

Rank	Male Name	Female Name
1	Jacob	Sophia
2	Mason	Emma
3	Ethan	Isabella
4	Noah	Olivia
5	William	Ava
6	Liam	Emily
7	Jayden	Abigail
8	Michael	Mia
9	Alexander	Madison
10	Aiden	Elizabeth
11	Daniel	Chloe
12	Matthew	Ella
13	Elijah	Avery
14	James	Addison
15	Anthony	Aubrey
16	Benjamin	Lily
17	Joshua	Natalie
18	Andrew	Sofia
19	David	Charlotte
20	Joseph	Zoey

1. Write the `getList` method in the `BabyNamesQuery` class using JDBC to provide the same functionality as the **Popular Names by Birth Year** application on the Social Security website.
2. Write the `getRank` method in the `BabyNamesQuery` class using JDBC to provide the same functionality as the **Popularity of a Name** application on the Social Security website.

The following SQL statements are examples of the `String` query objects that you could pass to the `executeQuery` method of the `Statement` interface to return a `ResultSet` object. Figure 28.23 from the textbook would be a good starting point for the necessary Java code.

```
SELECT NAME
FROM YOB2012
WHERE SEX='M'
ORDER BY NUMBER DESC, NAME ASC
FETCH FIRST 20 ROWS ONLY
```

```
SELECT NAME, NUMBER
FROM YOB2012
WHERE SEX='M'
ORDER BY NUMBER DESC, NAME ASC
FETCH FIRST 20 ROWS ONLY
```

```
SELECT MALE
FROM TOTALBIRTHS
WHERE BIRTHYEAR=2012
```

```
SELECT NUMBER
FROM YOB2012
WHERE NAME='Chloe' AND SEX='F'
```

```
SELECT COUNT (NAME)
FROM YOB2012
WHERE SEX='F' AND NUMBER > 9595
OR SEX='F' AND NUMBER = 9595 AND NAME<='Chloe'
```